What is claimed is:

1. A semiconductor electro-absorption modulator integrated light emission element, comprising:

a light emitting portion having a semiconductor multiple-quantum-well structure, including a well layer and a barrier layer in an active layer of light emission region thereof, for lasing a single in vertical mode;

a modulator proton being positioned at a light emission side of said light emitting portion, and being constructed with a plurality of electro-absorption optical modulators, each having the semiconductor multiple-quantum-well structure including the well layer and the barrier layer therein, and optical separate-confinement-heterostructures putting said semiconductor multiple-quantum-well structure including the well layer and the barrier layer therebetween, wherein

an absorption edge wavelength under no biasing condition on the semiconductor multiple-quantum-well structure, owned by said modulator which is near to the light emission side of said light emitting portion, is equal to or longer than the absorption edge wavelength which is owned by said modulator positioned far from the light emission side of said light emitting portion.

2. A semiconductor electro-absorption modulator integrated light emission element, as defined in the claim 1, wherein said plurality of modulators have respective α parameter values according to a fiber-response-peak method, being different to each other.

3. A semiconductor electro-absorption modulator integrated light emission element, as defined in the claim 2, wherein said semiconductor multiple-quantum-well structure is strained multiple-quantum-well structure, and two of said modulators neighboring each other are different to each other,

in the thickness of said well layer and thickness of the barrier layer.

4. A semiconductor electro-absorption modulator integrated light emission element, as defined in the claim 2, wherein two of said modulators neighboring each other are different to each other, in the thickness of said optical separate-confinement-heterostructures thereof.

5. A semiconductor electro-absorption modulator integrated light emission element, as defined in the claim 2, wherein two of said modulators neighboring each other are different to each other, in composition ratio of said barrier layer in the semiconductor multiple-quantum-well structure.

6. A semiconductor electro-absorption modulator integrated light emission element, as defined in the claim 2, wherein two of said modulators neighboring each other are different to each other, in a number of layers of said well layer in the semiconductor multiple-quantum-well structure.

7. A semiconductor electro-absorption modulator integrated light emission element, as defined in the claim 2, wherein two of said modulators neighboring each other are different to each other, in a density of p-type doping in a p-type doping layer thereof.

8. A semiconductor electro-absorption modulator integrated light emission element, as defined in the claim 2, wherein two of said modulators neighboring each other are different to each other, in EA modulator length thereof.

9. A light emission element module, comprising:

a carrier chip, on which is mounted the semiconductor electro-absorption modulator integrated light emission element being described in the claim 2;

a plurality of signal wirings for electrically connecting between said light emission element and said chip carrier, for transmitting electric signals corresponding to the number of said modulators in said modulator portion;

a plurality of input terminals corresponding to the number of said modulators, being connected to said signal wirings for transmission of said electrical signals;

a lens for condensing a signal light;

an isolator for polarizing said signal light; and

an optical fiber for transmitting said signal light, wherein said lens, isolator and optical fiber are fixed on an optical axis of a signal light, which is obtained through electric/photo conversion of said electric signal by said light emission element, and are air-tightly sealed as a package.

10. A light emission element module, comprising:

a carrier chip, on which is mounted the semiconductor electro-absorption modulator integrated light emission element being described in the claim 3;

a plurality of signal wirings for electrically connecting between said light emission element and said chip carrier, for transmitting electric signals corresponding to the number of said modulators in said modulator portion;

a plurality of input terminals corresponding to the number of said modulators, being connected to said signal wirings for transmission of said electrical signals;

a lens for condensing a signal light;

an isolator for polarizing said signal light; and

an optical fiber for transmitting said signal light, wherein said lens, isolator and optical fiber are fixed on an

optical axis of a signal light, which is obtained through electric/photo conversion of said electric signal by said light emission element, and are air-tightly sealed as a package.

11. An optical transmitter, comprising:

a drive circuit portion, being constructed with a driver circuit for inputting an electric signal to be transmitted as a signal light, and a change-over switch for changing over a route of said electric signal with a change-over signal; and

an optical transmitter, being constructed with the light emission element module as described in the claim 9, wherein

any one of said plurality of modulators is driven by said change-over signal.

12. An optical transmitter, comprising:

a drive circuit portion, being constructed with a driver circuit for inputting an electric signal to be transmitted as a signal light, and a change-over switch for changing over a route of said electric signal with a change-over signal; and

an optical transmitter, being constructed with the light emission element module as described in the claim 10, wherein

any one of said plurality of modulators is driven by said change-over signal.

13. An optical transmission system, comprising:

an optical transmitter as described in the claim 11;

an optical switch for inputting a signal light emitted from said optical transmitter and for changing over to any one of plural output routes existing, depending upon a change-over signal;

a plurality of optical fibers for inputting an output of said optical switch, corresponding to said plural output routes;

and

an optical receiver for receiving said signal light transmitted on said optical fiber, wherein the transmission route is changed over depending upon said change-over signal.

14. An optical transmission system, comprising:

an optical transmitter as described in the claim 12;

an optical switch for inputting a signal light emitted from said optical transmitter and for changing over to any one of plural output routes existing, depending upon a change-over signal;

a plurality of optical fibers for inputting an output of said optical switch, corresponding to said plural output routes; and

an optical receiver for receiving said signal light transmitted on said optical fiber, wherein the transmission route is changed over depending upon said change-over signal.

15. A light wavelength multiplex optical transmission system, comprising:

a plurality of optical transmitters as described in the claim 13, for emitting lights, each being different in wavelength;

an optical coupler for multiplexing the signal lights of said plurality of optical transmitters and for outputting a wavelength multiplex signal light;

an optical switch for inputting the wavelength multiplex signal light and for changing over to any one of plural output routes existing, depending upon a change-over signal;

a plurality of optical fibers for inputting an output of said optical switch, corresponding to said plural output routes;

an optical divider for dividing said wavelength multiplex

signal light into the respective signal lights at each wavelength thereof; and

an optical receiver for receiving said signal light transmitted on said optical fiber, wherein the transmission route is changed over depending upon said change-over signal.

16. A light wavelength multiplex optical transmission system, comprising:

a plurality of optical transmitters as described in the claim 13, for emitting lights, each being different in wavelength;

an optical coupler for multiplexing the signal lights of said plurality of optical transmitters and for outputting a wavelength multiplex signal light;

an optical switch for inputting the wavelength multiplex signal light and for changing over to any one of plural output routes existing, depending upon a change-over signal;

a plurality of optical fibers for inputting an output of said optical switch, corresponding to said plural output routes;

an optical divider for dividing said wavelength multiplex signal light into the respective signal lights at each wavelength thereof; and

an optical receiver for receiving said signal light transmitted on said optical fiber, wherein the transmission route is changed over depending upon said change-over signal.